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EXAMINER	
RODEE, CHRISTOPHER D	

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Please find below and/or attached an Office communication concerning this application or proceeding.

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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.

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Commissioner for Patents

See attached communication. The period for response continues from that given in the Final Office action.

Remarks

Applicant's counsel requested that the grounds of rejection under § 103 applicable to the instant claims be formulated in a single statement of rejection to aid counsel in preparation of an Appeal (see MPEP 706.07). See attached Interview Summary. The grounds of rejection presented throughout prosecution are therefore combined into this single communication. No new grounds of rejection are presented in this communication. The other grounds of rejection are maintained for the reasons given in the prior Office actions.

Claim Rejections - 35 USC § 103

Claims 32-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over EPA 176 630 in view of Whitbread in US Patent 3,325,409, all further in view of Handbook of Imaging Materials to Diamond, Metcalfe in US Patent 3,078,231, and Wagner in US Patent 3,438,904.

The European document discloses a liquid toner and method of making and using the toner. The liquid toner comprises a pigment coated with an ionomer resin (an anionic addition polymer) such as Copolymer D. The acid groups of the ionomer may be those discussed on page 7. The ionomer enhances the chargeablity of the pigment particles by giving stability to the toner charge (EP pp. 1-2). The coated pigment is dispersed in a carrier liquid. See Examples. The EP reference prepares the liquid toner by either precoating the pigment particles with the ionomer or dispersing the pigment into the carrier liquid and then adding the ionomer which appear to adsorb onto the pigment (p. 13; Examples). Because the ionomer remains on the pigment particle it appears to be insoluble in the carrier liquid at room temperature. The liquid developers are used in conventional developing processes of charging, imaging, developing, and transferring.

The reference does not disclose a pigmented polymer and does not disclose a charge director in the process of making the liquid toner.

Whitbread discloses a pigment used in a liquid toner, which comprises a mixture of a hydrogenated rosin and carbon black or phthalocyanine blue. This pigment is dispersable in the carrier liquid (cols. 1-2). Because the pigmented polymer is used as a toner it appears to be chargeable to a first extent.

Metcalfe discloses that pigment particles do not necessarily have the necessary and required charge for a desired development process and thus charge control agents (i.e., compounds which adjust the charge of the pigment in the carrier liquid) are coated onto the pigment to give the requisite charge (col. 1, l. 51-54; col. 1, l. 62-col. 2, l. 20).

Diamond discloses charge directors as commonly employed in the art to impart the desired charge to the liquid developer (p. 233).

Wagner teaches that pigment coatings differ the charge polarity of the pigment because these components change the surface charging characteristics of the pigment (see Wagner col. 5, l. 37-42).

Independent claim 32 does not require any specific charge level for the pigmented particle (only that it has "a given particle conductivity") while independent claim 33 defines the charge based on any particular process of image formation (i.e., "at least one ionomer component in an amount effective to impart enhanced chargeability to the pigmented polymer to an extent that the coated particles can be used to develop a latent electrostatic image in the particular process for electrostatic development of electrostatic images"). This includes situations where the charge is different from that inherently possessed by Whitbread's pigmented particle.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the pigment of Whitbread as the pigment in the European document because Whitbread discloses the hydrogenated rosin/pigment mixture as providing high contrast images, which are scuff resistant when dried. The artisan would recognize that the resin coating in the European document is applied to the pigment to impart the desired charge to a pigment particle (paragraph spanning pp. 1-2; note a similar principle in Metcalfe) and thus the artisan would reasonably conclude that the charge on the pigment particle of Whitbread could be controlled by the ionomer resin coating of the European document. Thus the artisan would obtain by the combination high contrast images, which are scuff resistant while obtaining the charge characteristics of the European document. It would also have been obvious to add a charge director to the liquid developer because Diamond discloses charge directors as well known components to produce the desired charge on the toner. The addition of the ionomer resin to the pigment in the European document (EP p. 13) would have been expected to differ the charge polarity of the pigment because these components would change the surface charging characteristics of the pigment (see Wagner col. 5, l. 37-42). It would also have been obvious to heat the ionomer during the coating when the ionomer becomes adsorbed because this would enhance the ability of the ionomer to come in contact with the pigment particles and then cooling would also have been obvious in order to retain the ionomer on the pigment particle. The artisan would have been expected to optimize the amount of ionomer coating given the guidance on EP p. 8, which suggests from 2 to 50 weight percent of the ionomer, particularly at the specified lower limit. The applied references are all concerned with the development of electrostatic latent images. Thus the artisan would produce the toner to have develop the images be providing the toner materials with suitability chargeability.

The Examiner notes that Whitbread combines rosin and pigment to produce scuff resistant images when dried (col. 2, l. 21-25). The artisan seeking to obtain this advantage while controlling the charging to a specific degree such as taught by the EP reference would have ample motivation to combine the references to obtain the combination of scuff resistance and controlled chargeability by the references. The art clearly indicates that the artisan would know that toner particles can be coated to obtain the desired charge for a specific application. Metcalfe teaches that pigment particles do not necessarily have the necessary and required charge for a desired development process and thus charge control agents (i.e., compounds which adjust the charge of the pigment in the carrier liquid) are coated onto the pigment to give the requisite charge. The body of art is such that the artisan would recognize that the pigmented particles are known to provide certain advantages (e.g., Whitbread's high contrast, scuff resistant images). The artisan would also recognize that the art teaches that coating the particle with an ionomer, as in the EP reference, can modify the charge of toner particles.

Claims 30-44 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over EPA 176 630 in view of *Electrophotography* to Schaffert, pp. 69-73, all further in view of Handbook of Imaging Materials to Diamond, Metcalfe in US Patent 3,078,231, and Wagner in US Patent 3,438,904.

The European document discloses a liquid toner and method of making and using the toner. The liquid toner comprises a pigment coated with an ionomer resin (an anionic addition polymer) such as Copolymer D. The acid groups of the ionomer may be those discussed on page 7. The ionomer enhances the chargeablity of the pigment particles by giving stability to the toner charge (EP pp. 1-2). The coated pigment is dispersed in a carrier liquid. See Examples. The EP reference prepares the liquid toner by either precoating the pigment

particles with the ionomer or dispersing the pigment into the carrier liquid and then adding the ionomer which appear to adsorb onto the pigment (p. 13; Examples). Because the ionomer remains on the pigment particle it appears to be insoluble in the carrier liquid at room temperature. The liquid developers are used in conventional developing processes of charging, imaging, developing, and transferring.

The reference does not disclose a pigmented polymer and does not disclose a charge director in the process of making the liquid toner.

Schaffert provides disclosure and motivation for the use of pigmented polymer particles in the invention of the EP document. Specifically, Schaffert discusses liquid developers beginning on page 70 and states that dispersions of pigment particles in a carrier liquid are used as liquid developers. The reference states that it is known to mill the pigment with a resin or oil binders to provide fine suspensions from which images of very fine grain can be obtained. The reference further states the advantage of the binder-pigment milling as providing bonding of the pigment to development paper (i.e., adhesion). The resultant particle of milling would be a pigmented particle because the binder resin is present with the pigment in the resultant particle. Schaffert also shows in Table 4 (p. 73) that known pigments and dyes for fusible toners have weak positive and weak negative charges and that synthetic polymeric binders for fusible toner particles may have no charging effect at all. This suggests that the combination of pigment and resin can be chosen to give a weakly charged particle..

Metcalfe discloses that pigment particles do not necessarily have the necessary and required charge for a desired development process and thus charge control agents (i.e., compounds which adjust the charge of the pigment in the carrier liquid) are coated onto the pigment to give the requisite charge (col. 1, l. 51-54; col. 1, l. 62-col. 2, l. 20).

Diamond discloses charge directors as commonly employed in the art to impart the desired charge to the liquid developer (p. 233).

Wagner teaches that pigment coatings differ the charge polarity of the pigment because these components change the surface charging characteristics of the pigment (see Wagner col. 5, l. 37-42).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a pigmented polymer particle as taught by Schaffert for the pigment in the EP reference because Schaffert teaches that these particles, formed by milling the pigment and binder, are effective for forming fine dispersions. The artisan would recognize that fine dispersions of the pigmented particle would increase the detail of the developed image. Further, the presence of the resin in the pigmented particle would aid in bonding of the pigment to the final receiver. It would also have been obvious to add a charge director to the liquid developer of the EP document because Diamond discloses charge directors as well known components to produce the desired charge on the toner. The addition of the ionomer resin to the pigment in the European document (EP p. 13) would have been expected to change the charge polarity of the pigment because these components would change the surface charging characteristics of the pigment (see Wagner col. 5, l. 37-42). It would also have been obvious to heat the ionomer during coating when the ionomer becomes adsorbed because this would enhance the ability of the ionomer to come in contact with the pigment particles and then cooling would also have been obvious in order to retain the ionomer on the pigment particle and use the developer at room temperature.

The artisan would have been expected to optimize the amount of ionomer coating given the guidance on EP p. 8, which suggests from 2 to 50 weight percent of the ionomer, particularly at the specified lower limit. The applied references are all concerned with the development of

electrostatic latent images. Thus the artisan would produce the toner to have develop the images be providing the toner materials with suitability chargeability.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher D RoDee whose telephone number is 703 308-2465. The examiner can normally be reached on most weekdays from 6 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 703 308-2464. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0661.

cdr
1 December 2003

CHRISTOPHER RODEE
PRIMARY EXAMINER